

Linzer biol. Beitr.	47/2	1581-1599	30.12.2015
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Distributional checklist of sphecid wasps (Hymenoptera: Ampulicidae, Sphecidae, Crabronidae) from Vietnam

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A b s t r a c t : A distributional checklist of sphecid wasps from Vietnam is first presented. A total of 49 species and subspecies belonging to 3 families, 9 subfamilies, and 20 genera are recorded to date from Vietnam. Of these, 2 species, 20 species and 2 subspecies, and 24 species and 1 subspecies belong to the family Ampulicidae, Sphecidae, and Crabronidae, respectively. The references of their distribution in Vietnam along with synonymic and distributional information are also provided.

K e y w o r d s : Hymenoptera, Sphecidae, checklist, sphecid, Vietnam.

Introduction

Sphecid wasps, with more than 9700 species into more than 300 genera (including fossil genera) worldwide, are divided into four families. They are Heterogynaidae, Ampulicidae, Sphecidae, and Crabronidae with 8 species in 1 genus, 202 in 6, 736 in 19, and 8810 species in 245, respectively (PULAWSKI 2015). Three remaining families, excluding the family Heterogynaidae, are distributed in the Oriental region.

Sphecid wasps are also known as a group of aculeate Hymenoptera that has attracted much interest because of their complex breeding behaviour. Adults of this group include very small and inconspicuous insects as well as some of the largest and most spectacular wasps of our fauna (BUCK 2003). Sphecid wasps either dig simple burrows in soil or reuse pre-existing cavities for nesting sites. Generally speaking the nests consist of a succession of cells that are provisioned with prey items as food for larvae (BARTHÉLÉMY 2014). Besides their fascinating biology this group is of interest to ecologists and conservation biologists because many of its species inhabit vulnerable and endangered habitats (BUCK 2003).

Spread from North to South with about 3200 km long of the coastline and more than 4600 km long of the land boundary, Vietnam is also known as a country of mega biodiversity. However Vietnamese sphecid fauna has been very poorly studied. As the basis for valuable guide for future taxonomic research, the present study aims to provide the first distributional checklist of Vietnamese sphecid.

Materials and methods

The present paper is mainly based on previously published original literature and the higher classification system and species names provided by PULAWSKI (2015). Genus names are alphabetically listed in each tribe of subfamilies, and species names are also listed alphabetically in each genus. Distributional data are summarized by country for a taxon treated as valid. Provincial distribution and references are only for records from Vietnam.

The abbreviations of museums or institutions where the type specimens are kept are as follows. The acronyms follow Arnett's the Insect and spider collections of the world (<http://hbs.bishopmuseum.org/codens/codens-inst.html>).

BMNH The Natural History Museum, United Kingdom, London.
 BPBM Bernice P. Bishop Museum, Honolulu, Hawaii, USA.
 DEI Deutsches Entomologisches Institut, Eberswalde, Germany.
 IRSNB Institut Royal des Sciences Naturelles de Belgique, Brussels, Belgium.
 LNMD Landessammlungen für Naturkunde, Münster, Germany.
 MHNB Muséum d'Histoire Naturelle de Bâle, Bâle (=Basel), Switzerland.
 MHNG Museum d'Histoire Naturelle, Genève, France.
 MLUH Wissenschaftsbereich Zoologie, Martin-Luther-Universität, Halle, Germany.
 MNHN Muséum National d'Histoire Naturelle, Laboratoire d'Entomologie, Paris, France.
 MSNG Museo Civico di Storia Naturale "Giacomo Doria", Genova, Italy.
 MZFN Museo Zoologico dell'Università "Federico II", Napoli, Italy.
 MZLU Lund University, Lund, Sweden.
 NHMW Naturhistorisches Museum, Zoologische Abteilung, Wien.
 OXUM University Museum of Natural History, Oxford, United Kingdom.
 PMA Provincial Museum of Alberta, Edmonton, Alberta, Canada.
 RMNH National Natuurhistorisch Museum, Leiden, Netherlands.
 SMSM Sarawak Museum, Kuching, Sarawak, Malaysia.
 UOPJ Osaka Prefecture University, Sakai, Osaka, Japan.
 USNM National Museum of Natural History, Washington D.C. USA.
 ZIN Zoological Institute, Russian Academy of Sciences, St. Petersburg, Russia.
 ZMHU Museum für Naturkunde der Humboldt Universität, Berlin, Germany.
 ZMUC Zoological Museum, University of Copenhagen, København (=Copenhagen), Denmark.

Results

Family Ampulicidae

Subfamily Ampulicinae

Genus *Ampulex* JURINE, 1807

Ampulex compressa (FABRICIUS, 1781)

Sphex compressus FABRICIUS, 1781: 455, sex not indicated (as *compressa*, incorrect original termination), "India: Kerala: Malabar" (BMNH).

Ampulex sinensis de SAUSSURE, 1867: 43, ♂, "China: Hong Kong" (holotype or syntypes: ♂, NHMW).

Chlorampulex striolata de SAUSSURE, 1892: 446, ♀, "Tanzania: Zanzibar: no specific locality" (holotype or syntypes: ♀, MHNG).

Distribution: China: Hong Kong, India, Indonesia, Island of Bourbon, French islands, Seychelles Islands, Island of Reunion, Philippines, New Caledonia, Hawaii, Mauritius, Zanzibar, Ethiopia, Madagascar, Southern Arabia, Bangladesh, Island of St. Helena, Tanzania, Kenya, Singapore, Sri Lanka, **Vietnam**: Cuc Phuong National Park (NGUYEN et al. 2007).

There is very enigmatic thing in paper of NGUYEN et al. (2007) that they recorded this species belonging to the subfamily Ammophilinae, but in fact *Ampulex compressa* belongs to the subfamily Ampulicinae.

***Ampulex varicolor* TURNER, 1919**

Ampulex varicolor TURNER, 1919: 392, ♀, "Vietnam: Xieng Khouang, Ban Sai" (holotype: ♀, BMNH).

Distribution: Laos, **Vietnam**: Annam (= currently centre of Vietnam) (TURNER 1919).

Both BOHART & MENKE (1976) and PULAWSKI (2015) have a reference mistake when they list the distribution of this species as follows "Vietnam: Xieng Khouang, Ban Sai". Because Xieng Khouang, Ban Sai (= Xieng Khouang Province, Ban Sai District) belongs to Laos.

Family S p h e c i d a e

Subfamily Ammophilinae

Genus *Ammophila* KIRBY, 1798

***Ammophila clavus clavus* (FABRICIUS, 1775)**

Sphex clavus FABRICIUS, 1775: 348, sex not indicated (as alauus), "Nova Hollandia (now Australia): no specific locality" (holotype or syntypes: ♀, BMNH).

Ammophila atripes SMITH, 1852: 46, ♀, "India: Maharashtra, Khandaly" (holotype or syntypes: ♀, BMNH).

Ammophila basalis SMITH, 1856: 214, ♀, "India or Pakistan: Punjab, no specific locality" (syntypes: ♀, BMNH).

Ammophila nigripes SMITH, 1856: 215, ♂, "India: Tamil Nadu, Madras" (holotype or syntypes: ♂, BMNH).

Ammophila dimidiata SMITH, 1856: 216, ♀, junior primary homonym of *Ammophila dimidiata* (Christ, 1791), "India: Bombay, Madras, north Bengal" (syntypes: ♀, BMNH).

Ammophila simillima SMITH, 1856: 217, ♀, "China: Hong Kong" (holotype or syntypes: ♀, BMNH).

Ammophila pulchella SMITH, 1856: 218, ♂, "China: Hong Kong and Shanghai" (syntypes: ♂, BMNH).

Ammophila longiventris de SAUSSURE, 1867: 24, ♂, "Sri Lanka: Trincomalee" (lectotype: ♂, MHNG).

Ammophila humbertiana de SAUSSURE, 1867: 24, ♀, "Sri Lanka: Trincomalee" (lectotype: ♀, MHNG).

Ammophila spinosa SMITH, 1873: 259, ♀, "China: Hong Kong" (holotype or syntypes: ♀, BMNH).

Ammophila orientalis CAMERON, 1889: 9, ♀, "origin not indicated, but probably India" (syntypes: Origin not indicated, OXUM).

Ammophila buddha CAMERON, 1889: 94, sex not indicated, "India: Uttar Pradesh, Allahabad; and West Bengal: Barrackpore 20km N Calcutta" (syntypes: Origin not indicated, OXUM).

Distribution: Australia, Indonesia, Taiwan, China: Hong Kong, Korea, Japan, Thailand, Laos, India, Malaysia, Philippines, Pakistan, Sri-Lanka, **Vietnam**: Cuc Phuong National Park (NGUYEN et al. 2007), Dak Lak (DOLFFUSS 2013b).

NGUYEN et al. (2007) recorded this species under *Ammophila atripes* but it synonymized with *Ammophila clavus* by DOLFFUSS (2013a).

***Ammophila laevigata* SMITH, 1856**

Ammophila laevigata SMITH, 1856: 215, ♀, "India: Tamil Nadu, Madras; Gujarat: no specific locality" (syntypes: ♀, BMNH).

Ammophila laevigata ab. *bicellaris* STRAND, 1915: 97, ♂, "Sri Lanka: Vurelia" (holotype: ♂, DEI).

Distribution: India, Laos, Nepal, Sri Lanka, Thailand, **Vietnam**: Dak Lak (DOLFFUSS 2013b).

Subfamily Chloriontinae

Genus *Chlorion* LATREILLE, 1802

***Chlorion lobatum* (FABRICIUS, 1775)**

Sphex lobatum FABRICIUS, 1775: 348, sex not indicated (as *lobata*, incorrect original termination), "Africa, actually India or China: no specific locality, designated by van der Vecht, 1961: 37" (lectotype: ♀, BMNH).

Sphex semiauratus viridis BARBUT, 1781: 255, sex not indicated (as *Semiaurata viridis*, incorrect original termination), "origin unknown, not British" (destroyed?).

?*Sphex ferus* DRURY, 1782: 57, ♀, "China: no specific locality" (lost?).

Sphex chrysos CHRIST, 1791: 308, ♀, "West Indies: no specific locality" (holotype or syntypes?, lost).

Sphex chrysos nitidus CHRIST, 1791: 310, sex not indicated (as *nitidi*, incorrect original termination), "origin unknown" (holotype or syntypes?, lost).

?*Sphex smaragdinus* CHRIST, 1791: 310, sex not indicated, "China: no specific locality" (holotype or syntypes?, lost).

Chlorion azureum LEPELETIER & AUDINET-SERVILLE, 1828: 451, ♀, ♂, "origin unknown" (lectotype: ♂, M. SPINOLA collection, Torino).

Distribution: India, Sri Lanka, Bangladesh, Myanmar, Nepal, China, Indonesia, Malaysia, West Indies, **Vietnam** (referred from PULAWSKI 2015).

Subfamily Sceliphrinae

Tribe Sceliphriini

Genus *Chalybion* DAHLBOM, 1843

***Chalybion dolichothorax* (KOHL, 1918)**

Sceliphron dolichothorax KOHL, 1918: 78, ♀, "China: no specific locality" (holotype: ♀, ZMHU).

Distribution: China, **Vietnam**: Tonkin Central (= North of Vietnam currently) (HENSEN 1988).

***Chalybion japonicum* (GRIBODO, 1883)**

Chalybion curvatum RITSEMA, 1880: 226, ♀, ♂, junior secondary homonym of *Chalybion curvatum* (SMITH, 1870), "Japan: no specific locality" (lectotype: ♀, RMNH).

Pelopaeus japonicas GRIBODO, 1883: 264, ♀, ♂ (as tentative new species), "Japan: no specific locality" (lectotype: ♀, MSNG).

Pelopoeus punctatus KOHL, 1888: 155, ♀, "Tanzania: Zanzibar" (holotype: ♀, ZMHU).

Sceliphron inflexum SICKMANN, 1894: 220, ♀, ♂, "China: Hopei Province, Tientsing" (syntypes?, LNMD).

Sceliphron ritsemae DALLA TORRE, 1897: 389, substitute name for *Sceliphron curvatum* (RITSEMA, 1880).

Chalybion japonicum PÉREZ, 1905: 152, / (as *japonicum*, incorrect original capitalization), junior secondary homonym of *Chalybion japonicum* (Gribodo, 1883), "Japan: no specific locality but presumably Tokyo area" (holotype or syntypes: ♀, MNHN).

Sceliphron degenerans KOHL, 1918: 79, ♀, "China: Peking" (holotype: ♀, ZMHU).

Distribution: China: Hong Kong, India, Japan: Ryukyus, Korea, Taiwan, Tanzania, Thailand, **Vietnam**: Tonkin (= North of Vietnam currently), Ha Giang, Hanoi (HENSEN 1988, BARTHÉLÉMY 2014).

BARTHÉLÉMY (2014) recorded this species from Vietnam as *Chalybion japonicum punctatum* (KOHL, 1888) without showing its exact locality. But *C. japonicum punctatum* was synonymized with *Pelopoeus punctatus* KOHL 1888 by BOHART & MENKE 1976, and *P. punctatus* was synonymized with *C. japonicum* by HENSEN (1988).

***Chalybion gracile* HENSEN, 1988**

Chalybion gracile HENSEN, 1988: 28, ♀, "Sri Lanka: Ratnapura District, Sinharaja Forest" (holotype: ♀, USNM).

Distribution: Sri Lanka, Malaya, Indonesia, **Vietnam**: Cochichine P. condor (= Con Dao Island, Ba Ria-Vung Tau Province currently) (HENSEN 1988).

***Chalybion sumatranum* (KOHL, 1884)**

Pelopoeus sumatranum KOHL, 1884: 375, ♀, "Indonesia: Sumatra, no specific locality" (holotype or syntypes: ♀, NHMW).

Distribution: Indonesia: Sumatra; China: Hainan, Hong Kong; **Vietnam** (BARTHÉLÉMY 2014).

BARTHÉLÉMY (2014) recorded this species occurring in Vietnam, but did not show its exact locality.

Genus *Sceliphron* KLUG, 1801

***Sceliphron deforme deforme* (SMITH, 1856)**

Pelopoeus deformis SMITH, 1956: 231, ♀, "China: North, no specific locality" (lectotype: ♀, BMNH).

Sceliphron deforme taiwanum TSUNEKI, 1971: 6, ♀, ♂, "Taiwan: Taitung Prefecture, Chulu" (holotype: ♀, USNM).

Distribution: China: Hong Kong, Japan, India, Korea, Montenegro, Taiwan,

Russia, Tajikistan, Philippines, Mongolia, Southeast Kazakhstan, Myanmar, Thailand, Laos, **Vietnam**: Ht. Tonkin (= North of Vietnam currently), Hoabink (= Hoa Binh Province currently), Phuong Lom (HENSEN 1987); North (ĆETKOVIĆ et al. 2011).

Among specimens examined, HENSEN (1987) had a mistake when he listed 1♀, Tonkin, Hoabink belonging to China.

***Sceliphron javanum chinense* van BREUGEL, 1968**

Sceliphron javanum chinense van BREUGEL, 1968: 244, ♀, ♂, "China: Hainan Island, Fan Heang" (holotype: ♀, MCZ).

D i s t r i b u t i o n : China: Hainan to India, China, India, Laos, **Vietnam**: Thuduc (= Thu Duc District, Ho Chi Minh City currently) (van der VECHT & van BREUGEL 1968), Nam Cat Tien National Park (PÁDR & TKALCÚ 1989).

***Sceliphron javanum petiolare* KOHL, 1918**

Sceliphron petiolare KOHL, 1918: 95, ♀, "Indonesia: Sumatra, Deli" (holotype: ♀, ZMHU).

D i s t r i b u t i o n : India to Vietnam and Sumatra, India, Indonesia, **Vietnam**: Nam Cat Tien National Park (PÁDR & TKALCÚ 1989).

***Sceliphron madraspatatum madraspatatum* (FABRICIUS, 1781)**

Sphex madraspatanus FABRICIUS, 1781: 455, sex not indicated (as madraspatana, incorrect original termination), "India: Kerala, former Malabar District" (lectotype: ♂, BMNH).

? *Sphex lugubris* CHRIST, 1791: 306, ... "St. Domingo", Junior primary homonym of *Sphex lugubris* Villers, 1789.

Pelopoeus interruptus PALISOT de BEAUVOIS, 1806: 51, sex not indicated, "origin unknown, but probably Asia" (holotype or syntypes?, destroyed?).

Pelopaeus bilineatus SMITH, 1852: 47, ♀, "India: Maharashtra, Bombay" (holotype or syntypes: ♀, BMNH).

Pelopoeus separates SMITH, 1852: 47, ♀, "India: Maharashtra, Bombay" (holotype or syntypes: ♀, BMNH).

D i s t r i b u t i o n : India, Indonesia, Malaysia, Myanmar, Maldives, China: Hong Kong, Japan, Taiwan, Thailand, Kazakhstan, Philippines, Uzbekistan, Sri Lanka, Ukraine, Syria, Laos, Cambodia, **Vietnam**: Ban Me Thuot, Tay Ninh, Phu Quoc (van der VECHT & van BREUGEL 1968), Nam Cat Tien National Park (PÁDR & TKALCÚ 1989).

***Sceliphron madraspatanum kohli* SICKMANN, 1894**

Sceliphron kohli SICKMANN, 1894: 218, ♀, ♂, "China: Hopei Province, Tientsin" (syntypes: ♀, NHMW).

D i s t r i b u t i o n : China, Japan, Ryukyus, **Vietnam**: Hanoi (van der VECHT & van BREUGEL 1968), Nam Cat Tien National Park (PÁDR & TKALCÚ 1989).

Subfamily Sphecinae

Tribe Prionychini

Genus *Prionyx* VANDER LINDEN, 1827

***Prionyx viduatus viduatus* (CHRIST, 1791)**

Sphex viduatus CHRIST, 1791: 305, sex not indicated (as *viduata*, incorrect original termination), "France: Provence region, no specific locality" (holotype or syntypes?, lost)

Sphex pubescens FABRICIUS, 1793: 205, sex not indicated, "Guinea: ♂ (lectotype), no specific locality" (lectotype: ♂, ZMUC).

Enodia canescens DAHLBOM, 1843: 28, ♀, ♂, "Senegal and Guinea: no specific localities" (syntypes, MZLU).

Sphex micans EVERSMANN, 1849: 368, ♀, ♂, "Russia: lower Volga area" (syntypes, ZIN).

Sphex leuconotus MORAWITZ, 1890: 579, ♀, "Turkmenistan: Ashkhabad" (lectotype: ♀, ZIN).

Sphex granti KIRBY, 1900: 23, ♀, ♂, "Yemen: Abd-el-Kuri islands, no specific locality" (syntypes, BMNH).

Sphex platynotus MATSUMURA, 1912: 177, 178, ♀, "Japan: Okinawa, no specific locality" (holotype or syntypes: ♀, depository?).

Sphex perezi BERLAND, 1926: 170, ♀, ♂, "Senegal: no specific locality" (Lectotype: ♀, MNHN).

? *Prionyx zanoni* GRIBODO, 1925: 88, ♀, ♂, "Libya: Fueihat 15 kms out of Benghazi" (syntypes, MSNG).

Distribution: Afghanistan, Algeria, Cameroon, Canary Islands, China, Cyprus, Democratic Republic of Congo, Egypt, Ethiopia, Greece, Guinea, France, India, Iran, Iraq, Israel, Italy, Japan, Kazakhstan, Kyrgyzstan, Gabon, Libya, Malta, Mauritania, Morocco, Namibia, Niger, Oman, Portugal, Russia, Saudi Arabia, Senegal, South Africa, Somalia, Spain, Sri Lanka, Syria, Taiwan, Tajikistan, Tanzania, Thailand, Tunisia, Turkey, Turkmenistan, Ukraine, United Arab Emirates, Uzbekistan, UAE, Western Sahara, Yemen, **Vietnam**: Tay Ninh (CLARK 1987; DANILOV 2012; AUGUL et al. 2015).

This species is recorded in Tay Ninh Province, Vietnam as a predator on the short horned grasshopper *Aiolopus thalassinus tumulus* (FABRICIUS) by CLARK (1987).

Tribe Sphecini

Genus *Isodontia* PATTON, 1880

***Isodontia auripygata* (STRAND, 1913)**

Sphex auripygatus STRAND, 1913: 80, ♂, "Taiwan: Kosempo" (holotype: ♂, DEI).

Distribution: China, Taiwan, **Vietnam** (HENSEN 1991)

HENSEN (1991) recorded this species from Vietnam without showing its exact locality.

***Isodontia chrysorrhoea* (KOHL, 1856)**

Sphex apicalis SMITH, 1856: 253, ♀, "Indonesia: Sumatra, no specific locality" (holotype or syntypes: ♀, BMNH).

Sphex chrysorrhoeus KOHL, 1890: 371, substitute name for *Sphex apicalis* SMITH, 1856: 253.

Sphex hewitti CAMERON, 1906: 119, ♂, "Malaysia: Sarawak, Kuching" (holotype or syntypes: ♂, BMNH? SMSM?).

Distribution: Indonesia, Malaysia, **Vietnam**: Tam Dao (= part of Vinh Phuc Province) (DOLFFUSS 2008).

***Isodontia diodon* (KOHL, 1890)**

Sphex diodon KOHL, 1890: 377, ♂, "Indonesia: Celebes and Sumatra, but probably Asian continent" (lectotype, NHMW).

Sphex maia BINGHAM, 1893: 379, ♀, ♂, "Myanmar: Tenasserim, no specific locality" (Syntypes, BMNH).

Distribution: Cambodia, China: Hong Kong, Indonesia, India, Laos, Myanmar, Nepal, Peninsular Malaysia, Singapore, Thailand, **Vietnam** (BARTHÉLÉMY 2014).

BARTHÉLÉMY 2014 recorded this species occurring in Vietnam, but did not show its exact locality.

Isodontia edax (BINGHAM, 1897)

Sphex edax BINGHAM, 1897: 251, ♀, "India: Sikkim; Myanmar: Tenasserim; Sri Lanka: no specific locality" (syntypes: ♀, BMNH).

Distribution: China, India: Sikkim, Myanmar, Sri Lanka, **Vietnam**: North (BOHART & MENKE 1976).

Genus *Sphex* LINNAEUS, 1758

Sphex argentatus ARGENTATUS FABRICIUS, 1787

Sphex argentatus FABRICIUS, 1787: 274, sex not indicated (as *argentata*, incorrect original termination), "India: Coromandel coast, no specific locality" (lectotype: ♀, ZMUC).

Sphex unicolor FABRICIUS, 1787: 275, sex not indicated, "Spain: no specific locality" (holotype or syntypes, ZMUC).

Sphex umbrosus CHRIST, 1791: 293, sex not indicated, "origin not indicated" (holotype or syntypes, destroyed).

Sphex argenteus TURTON, 1800: 485, sex not indicated, "India: Coromandel coast, no specific locality" (holotype or syntypes, destroyed).

Sphex argentifrons LEPELETIER, 1845: 337, ♀, "Indonesia: Java, no specific locality" (lectotype: ♀, M. Spinola collection, Torino).

Sphex plumifer COSTA, 1864: 112, sex not indicated, "Philippines: Luzon, no specific locality" (holotype, MZFN).

Sphex umbrosus var. *annulus* STRAND, 1913: 83, ♀, "Taiwan: Waihorin" (holotype: ♀, DEI).

Distribution: Angola, Australia, Cambodia, Dableeh island, Djibouti, Ethiopia, India, Indonesia, Japan, North America, New Guinea, Philippines, Thailand, China: Hong Kong, Australia, Benin, Botswana, Egypt, Kenya, Kuwait, Laos, Malawi, Myanmar, Malaysia, Mozambique, Namibia, South Africa, Sudan, Benin, Botswana, Taiwan, Tanzania, Zambia, Zaire, Zimbabwe, Ivory Coast, Senegal, Seychelles islands, Spain, Sudan, Sri Lanka, South Africa, Kazakhstan, Korea, Uganda, Namibia, Yemen, **Vietnam**: Cuc Phuong National Park (NGUYEN et al. 2007), Vung Tau (= Ba Ria – Vung Tau Province) (DOLFFUSS 2008, BARTHÉLÉMY 2014).

Sphex deplanatus KOHL, 1895

Sphex deplanatus KOHL, 1895: 53, ♂, "Sri Lanka: no specific locality" (holotype: ♂, NHMW).

Distribution: Sri Lanka, Yemen, India, **Vietnam**: Thuan Ho, Phan Rang (DOLFFUSS 2008).

Sphex diabolicus SMITH, 1858

Sphex diabolicus SMITH, 1858: 100, ♀, "Malaysia: Sarawak, no specific locality" (lectotype: ♀, OXUM).

Sphex fulvohirtus BINGHAM, 1890: 242, ♀, "Sri Lanka: Pundaluoya" (holotype: ♀, BMNH).

Sphex flammitrichus STRAND, 1913: 83, ♀, ♂, "Taiwan: Kankau" (lectotype: ♀, DEI).

Sphex umbrosus var. *aureopilosus* BERLAND, 1928: 330, ♀, ♂, "Vietnam: Ba-Cha in former Tonkin" (lectotype: ♂, MNHN).

Distribution: Malaysia, Indonesia, New Guinea, Philippines, India, Laos, China: Hong Kong, Sri Lanka, Taiwan, Korea, Japan, Vietnam: Ba-Cha in former Tonkin (= maybe part of Sa Pa District, Lao Cai Province currently) (BERLAND 1928); Hanoi; Thuan Ho Prov., Phan Rang (DOLFFUSS 2008).

BERLAND (1928) recorded this species under *Sphex umbrosus* var. *aureopilosus* at Ba-Cha in former Tonkin, but *S. umbrosus* var. *aureopilosus* was synonymized with *S. diabolicus* *flammitrichus* by MENKE in R. BOHART & MENKE 1976. HENSEN (1991) designated *S. diabolicus* *flammitrichus* as an independent species *S. flammitrichus* and also synonymized it with *S. diabolicus*. van der VECHT (1973) stated that "*Sphex fulvohirtus*, described from Ceylon, is very similar in general appearance, but differs in having the bristles on the clypeus black. Its status deserves further study. But when examined on Vietnamese specimens DOLFFUSS (2008) showed that "these specimens are characterized by black hairs on frons, clypeus and propodeum" So, there is variation among specimens collected from different localities, and he suggests that further examinations should be done.

Sphex sericeus (FABRICIUS, 1804)

Sphex aurulentus FABRICIUS, 1793: 201, sex not indicated, "India: Tranquebar" (holotype or syntypes, depository unknown).

Pepsis sericeus FABRICIUS, 1804: 211, sex not indicated, "Lectotype, ♀, in maris pacifici Insulis" (lectotype: ♀, ZMUC).

Sphex fabricii DAHLBOM, 1843: 27, ♀, "India: Tamil Nadu: Tranquebar" (syntypes: ♀, depository unknown).

Sphex lineolus LEPELETIER, 1845: 353, ♂, "Indonesia: Java, no specific locality" (holotype or syntypes: ♂; M. Spinola collection, Torino).

Sphex ferrugineus LEPELETIER, 1845: 345, ♀, "sans patrie mais exotique" (holotype or syntypes: ♀, originally Audinet-Serville collection, now?).

Sphex ferox SMITH, 1862: 55, ♂, "Indonesia: Ambon and Sulawesi, no specific localities" (syntypes, BMNH, OXUM).

Sphex lepeletieri de SAUSSURE, 1867: 40, ♀, "Indonesia: Java, Batavia, now Djakarta" (holotype or syntypes: ♀, NHMW).

Sphex godeffroyi de SAUSSURE, 1869: 57, ♀, "Australia: Cape York, no specific locality" (Museum Hamburg, destroyed in World War II).

Sphex aurifex SMITH, 1873: 460, ♀, "Australia: Western Australia, Champion Bay" (holotype: ♀, BMNH).

Sphex aurulentus var. *pallidehirtus* KOHL, 1890: 393, ♂, "Papua New Guinea: Port Moresby and Indonesia: Ambon" (syntypes, NHMW).

Sphex rugosus MATSUMURA, 1912: 176, 177, Junior primary homonym of *Sphex rugosus* De Geer, 1773, "Taiwan: Horisha, Koshun" (holotype or syntypes, depository?).

Sphex lineolus wegneri van der VECHT & KROMBEIN, 1955: 39, ♀, ♂, "Indonesia: Kalimanatan, Samarinda, Muara Kaman" (holotype: ♂, RMNH).

Sphex sericeus nigrescens van der VECHT & KROMBEIN, 1955: 39, ♀, ♂, "Philippines: Luzon, Los Banos" (holotype: ♀, USNM).

Sphex sericeus ferocior van der VECHT & KROMBEIN, 1955: 40, Substitute name for *Sphex ferox* Smith.

Sphex stueberi van der VECHT & KROMBEIN, 1955: 42, ♀, ♂, "Indonesia: Irian Jaya, Hollandia, now Jayapura" (holotype: ♀, RMNH).

Distribution: India, Sri Lanka, Laos, Myanmar, Cambodia, Malaysia, Philippi-

nes, Thailand, Indonesia, China: Hong Kong, Taiwan, Japan, Australia, Yemen, Timor, **Vietnam** (BARTHÉLÉMY 2014).

BARTHÉLÉMY 2014 recorded this species for Vietnam, but did not show its exact locality.

Sphex subtruncatus DAHLBOM, 1843

Sphex subtruncatus DAHLBOM, 1843: 25, ♀, "Africa: no specific locality but actually Oriental region according to W. Schulz, 1912: 94" (lectotype: ♀, MZLU).

Sphex nigripes SMITH, 1856: 254, ♀, "Indonesia: Sumatra, no specific locality; China: Shanghai" (syntypes, BMNH).

Sphex siamensis TASCHENBERG, 1869: 413, ♀, "India: Siam, no specific locality, but probably Philippines" (holotype or syntypes: ♀, MLUH).

Sphex erythropoda CAMERON, 1889: 110, ♀, "India: no specific locality" (syntypes: ♀, Calcutta Museum).

Sphex sulciscutus GRIBODO, 1894: 2, ♀, "Philippines: Mindoro, no specific locality" (holotype or syntypes: ♀, MSNG).

Sphex nigripes var. *tsingtauensis* STRAND, 1916: 108, ♂, "China: Tsingtau, now Qingdao" (holotype: ♂, DEI).

Sphex subtruncatus *xuthus* van der VECHT, 1957: 364, ♂, "Indonesia: Sumba, Bondo Kodi" (holotype: ♂, MHNB).

Sphex subtruncatus *coraxus* van der VECHT, 1957: 365, ♀, "Indonesia: Sumba, Pogobina" (holotype: ♀, MHNB).

Sphex subtruncatus *orius* van der VECHT, 1957: 366, ♀, ♂, "Indonesia: Flores, Rana Mese" (holotype: ♂, MHNB).

Sphex subtruncatus *krombeini* van der VECHT, 1984: 28, ♀, ♂, "Sri Lanka: Galle District, Kanneliya Jungle" (holotype: ♀, USNM).

Distribution: Korea, India, China: Hong Kong, Laos, Singapore, Indonesia, Taiwan, Philippines, Thailand, Sri Lanka, Nepal, Bhutan, Malaysia, Timor, Japan, Malawi, South Africa, Ethiopia, **Vietnam** (BERLAND 1928).

BERLAND (1928) recorded this species for Vietnam under *Sphex nigripes* without showing its exact locality, but *S. nigripes* synonymized with *S. subtruncatus* by SCHULZ 1912.

Family C r a b r o n i d a e

Subfamily Bembicinae

Tribe Bembicini

Genus *Argogorytes* (= *Malaygorytes*) ASHMEAD, 1899

Argogorytes tonkinensis (YASUMATSU, 1943)

Gorytes tonkinensis YASUMATSU, 1943: 3, ♀, "Vietnam: Hoa-Sinh" (holotype: ♀, Heude Museum Shanghai, China).

Distribution: China, **Vietnam**: Hoa-Sinh (= Hoa Binh Province currently) (YASUMATSU 1943).

BOHART & MENKE (1976) listed this species from only China, but in fact species name echoes this species belonging to Vietnam. Because word "Tonkin" is an area of Vietnam in the past (Tonkin = North of Vietnam currently). This may be seen as his reference mistake.

Subfamily Crabroninae

Tribe Crabronini

Genus *Dasyproctus* LEPELETIER & BRULLÉ, 1835

Dasyproctus agilis agilis (SMITH, 1858)

Crabro agilis SMITH, 1858: 18, ♀, "Indonesia: Sulawesi, no specific locality" (holotype or syntypes: ♀, OXUM).

Dasyproctus ceylonicus de SAUSSURE, 1867: 85, ♀, "Sri Lanka: no specific locality" (holotype or syntypes: ♀, MHNG).

Crabro indicus de SAUSSURE, 1892: 582, ♂, "India: West Bengal, Calcutta" (holotype or syntypes: ♂, MHNG).

Crabro infantulus KOHL, 1894: 294, ♂, "India: West Bengal, Calcutta" (syntypes: ♂, MHNG).

Crabro revelatus CAMERON, 1898: 34, ♀, "Sri Lanka: Trincomali" (holotype or syntypes: ♀, OXUM).

Dasyproctus philippinensis ASHMEAD, 1904: 129, sex not indicated, "Philippines: Luzon, Manila" (holotype, USNM).

Dasyproctus funestus TURNER, 1917: 188, ♂, "India: Bihar, Pusa" (syntypes: ♂, BMNH).

Distribution: India, Australia, Indonesia, Taiwan, Philippines, Malaysia, Japan, Pakistan, Sri Lanka, Thailand, Singapore, **Vietnam**: Tonkin (= North of Vietnam currently): région de Moa-Binh (= Hoa Binh Province currently) (LECLERCQ 1956, 1963, 1972).

LECLERCQ (1956, 1963) recorded this species under *Dasyproctus ceylonicus*. But in 1972 he synonymized it with *Dasyproctus agilis agilis*.

Dasyproctus agilis orientalis (CAMERON, 1890)

Crabro orientalis CAMERON, 1890: 272, ♀, "India: no specific locality" (holotype or syntypes: ♀, OXUM).

Distribution: India, China, Taiwan, Philippines, Laos, Malaysia, Pakistan, Thailand, Indonesia, Nepal, **Vietnam**: North (LECLERCQ 2015).

Dasyproctus buddha (CAMERON, 1889)

Rhopalum buddha CAMERON, 1889: 18, ♂, "India: Maharashtra, Pune" (holotype or syntypes: ♂, OXUM).

Crabro brookii BINGHAM, 1896: 444, ♀, "India: Arunachal Pradesh, Kumaon" (holotype or syntypes: ♀, BMNH).

Crabro taprobanae CAMERON, 1898: 30, ♀, "Sri Lanka: Trincomale" (holotype or syntypes: ♀, BMNH or OXUM).

Crabro idrieus CAMERON, 1901: 53, ♂, "India: Maldives Archipelago, Goifurhendu Atoll, Goidu" (holotype or syntypes: ♂, BMNH).

Crabro musaeus CAMERON, 1901: 53, ♀, "India: Maldives Archipelago, Mahlos Atoll" (holotype or syntypes: ♀, BMNH).

Dasyproctus testaceipalpis CAMERON, 1908: 305, ♀, "India: Gujarat, Deesa" (holotype or syntypes: ♀, BMNH).

Distribution: India, Pakistan, Myanmar, Malaysia, Philippines, Thailand, Taiwan, Laos, Maldives, Sri Lanka, **Vietnam**: Tonkin (= North of Vietnam currently), région de Moa-Binh (= Hoa Binh Province currently), Hanoi (LECLERCQ 1963).

Genus *Ectemnius* DAHLBOM 1845

Ectemnius ammanitus LECLERCQ, 1958

Ectemnius ammanitus LECLERCQ, 1958: 152, ♀, "Vietnam: Annam: Dalat" (holotype: ♀, IRSNB).

Distribution: China, India: Assam, Malaysia, Nepal, **Vietnam**: Da Lat (LECLERCQ 1958), Tonkin: Hoa Binh (LECLERCQ 1963, 1982).

BOHART & MENKE (1976) stated distribution of this species as follows: India: Assam, China: Tonkin (ca). Following his writing, Tonkin is counted as part of China. In fact Tonkin belongs to Vietnam in the past, and is North of Vietnam currently. Here is his reference mistake.

Ectemnius schlettereri schlettereri (KOHL, 1888)

Crabro schlettereri KOHL, 1888: 135, ♀, "Austria: Sudirol, St. Pauls near Bozen, now Italy: Alto Adige: St. Pauls near Bolzano" (holotype or syntypes: ♀, NHMW).

Distribution: Australia, Italy, Poland, Ukraine, Russia, Slovakia, China, Japan, Korea, Romania, Hungary, India, Amami Oshima Islands, Taiwan, Ryūkyū Islands, France, Czech Republic, Slovenia, **Vietnam**: Hoa-Binh (LECLERCQ 1963).

Genus *Entomognathus* DAHLBOM, 1844

Entomognathus rochei LECLERCQ, 1997

Entomognathus rochei LECLERCQ, 1997: 127, ♀, ♂, "Malaysia: Perak, Kledong Siong Forest Reserve" (holotype: ♀, BMNH).

Distribution: Malaysia, Myanmar, Brunei, **Vietnam**: North (LECLERCQ 1958, 1963, 1997).

LECLERCQ (1958, 1963) recorded specimens of this species collected from Vietnam under *Entomognathus siraiya* PATE 1944. But actually he (1997) described these specimens as a new species under name *E. rochei*.

Tribe Trypoxylini

Genus *Pison* JURINE, 1808

Pison rothneyi CAMERON, 1897

Pison rothneyi CAMERON, 1897: 81, ♀, "India: West Bengal, Barrackpore, now Barakpur" (holotype or syntypes: ♀, OXUM).

Pison crassicornis CAMERON, 1897: 25, ♂, "India: West Bengal, Barrackpore, now Barakpur" (holotype or syntypes: ♂, OXUM).

Distribution: India, Indonesia, Malaysia, Thailand, **Vietnam**: Tonkin, Poste de Dong Dang (= Dong Dang District, Lang Son Province) (ANTROPOV 1994).

Genus *Trypoxylon* LATREILLE, 1796

Trypoxylon bidenticulatum TSUNEKI, 1979

Trypoxylon bidenticulatum TSUNEKI, 1979: 65, ♀, "Vietnam: Fyan" (holotype: ♀, BPBM).

Distribution: **Vietnam**: Fyan (= Part of Lam Dong Province currently) (TSUNEKI 1979).

Trypoxylon petiolatum SMITH, 1858

Trypoxylon petiolatum SMITH, 1858: 105, ♀, "Malaysia: Sarawak" (lectotype: ♀, OXUM).

Trypoxylon rejector SMITH, 1870: 189, ♀, "India: North-West Provinces, now Uttar Pradesh: Mainpuri" (holotype or syntypes, lost?).

Trypoxylon obscurator SMITH, 1873: 194, ♀, ♂, "Japan: Hyogo" (syntypes, BMNH).

Trypoxylon accumulator SMITH, 1875: 38, ♀, "India: no specific locality" (lectotype: ♀, OXUM).

Trypoxylon javanum TASCHENBERG, 1875: 378, ♂, "Indonesia: Java, no specific locality" (holotype: ♂, MLUH).

Trypoxylon tinctipenne CAMERON, 1889: 121, ♀, ♂, "India: West Bengal, Barrackpore 20 km N Calcutta" (lectotype: ♂, OXUM).

Trypoxylon tricolor SICKMANN, 1894: 209, ♀, "China: Hopei Province, Tientsin" (holotype or syntype: ♀, Munster).

Trypoxylon cognatum CAMERON, 1897: 26, ♀, "India: Himalaya, no specific locality" (holotype: ♀, OXUM).

Trypoxylon erythrozonatum CAMERON, 1901: 54, ♀, "Maldives Islands" (lectotype: ♀, BMNH).

Trypoxylon responsum NURSE, 1903: 518, ♀, "India: Rajasthan, Mount Abu" (syntypes: ♀, BMNH).

Trypoxylon obscurator tropicale TSUNEKI, 1961: 383, ♀, ♂, "Thailand: Chiang Mai" (holotype: ♂, UOPJ).

Distribution: Malaysia, Singapore, Thailand, Laos, China, Nepal, Maldives Islands, Indonesia, Philippines, Taiwan, India, Brunei, China: Hong Kong, Korea, Japan, Ryūkyū, **Vietnam** (referred from PULAWSKI 2015).

Trypoxylon pygmaeum CAMERON, 1900

Trypoxylon pygmaeum CAMERON, 1900: 79, ♂, "India: Bengal, Barrackpore" (holotype: ♂, OXUM).

Distribution: India, Laos, Sri Lanka, **Vietnam** (referred from PULAWSKI 2015).

Subfamily Pemphredoninae

Tribe Pemphredonini

Genus *Tzustigmus* FINNAMORE, 1995

Tzustigmus khmer FINNAMORE, 1995

Tzustigmus khmer FINNAMORE, 1995: 212, ♀, ♂, "Vietnam: 15 km NW Da Lat" (holotype: ♂, BPBM).

Distribution: Thailand, **Vietnam**: Da Lat (= Part of Lam Dong Province) (FINNAMORE 1995).

***Tzustigmus syam* FINNAMORE, 1995**

Tzustigmus syam FINNAMORE, 1995: 213, ♀, ♂, "Thailand: Chiang Mai: 10 km W Fang" (holotype: ♂, PMA).

Distribution: Thailand, India, **Vietnam**: Da Lat (= Part of Lam Dong Province) (FINNAMORE 1995).

Tribe Psenini**Genus *Psen* LATREILLE, 1796*****Psen elisabethae elisabethae* van LITH, 1959**

Psen elisabethae van LITH, 1959: 31, ♀, ♂, "Indonesia: West Java, Mount Patuha, Rantjabali" (holotype: ♀, RMNH).

Distribution: India, Indonesia: Java, Sumatra, **Vietnam**: Mt. Lang Bian (Mountain Lang Bian, Da Lat, Lam Dong Province) (van LITH 1968).

According to van LITH (1968), specimen collected at Mt. Lang Bian in Vietnam can be a new subspecies not that it is *Psen elisabethae*. Because he stated that "A male collected in Viet-Nam, Mt. Lang Bian, 1500-2000m, 19 May-8 June 1961, in a Malaise trap by N. R. Spencer (BISH), could not yet be classified satisfactorily. It may be a new subspecies".

Genus *Pseneo* MALLOCH, 1933***Pseneo tridentatus tridentatus* (van LITH, 1959)**

Psen tridentatus van LITH, 1959: 55, ♀, "Indonesia: Sumatra, Muara Sako" (holotype: ♀, RMNH).

Distribution: Indonesia, Malaysia, Laos, **Vietnam**: S. of Dilinh (= Di Linh District, Lam Dong Province currently) (van LITH 1976).

Van LITH (1959, 1976) recorded this species under *Psen tridentatus tridentatus*, but *P. t. tridentatus* was synonymized with *Pseneo tridentatus tridentatus* by BOHART & MENKE (1976).

Genus *Psenulus* KOHL, 1897***Psenulus annamensis* van LITH, 1972**

Psenulus annamensis van LITH, 1972: 191, ♀, "Vietnam: Dai Lanh N Nha Trang" (holotype: ♀, BPBM).

Distribution: Laos, **Vietnam**: Dai Lanh, Nha Trang (= Part of Khanh Hoa Province) (van LITH 1972).

***Psenulus anomalus* van LITH, 1976**

Psenulus anomalus van LITH, 1976: 97, ♀, "Vietnam: 15-35 km NW Phan Rang" (holotype: ♀, BPBM).

Distribution: **Vietnam**: Phan Rang (van LITH 1976).

***Psenulus carinifrons malayanus* van LITH, 1969**

Psenulus carinifrons malayanus van LITH, 1969: 206, ♀, ♂, "Malaysia: Borneo, Forest Camp 19 km N Kalabakan" (holotype: ♀, BPBM).

Distribution: Malaya, Borneo, Sumatra, **Vietnam**: Ban Me Thuot (van LITH 1969).

***Psenulus diversus* van LITH, 1962**

Psenulus diversus van LITH, 1962: 70, ♀, "Singapore: no specific locality" (holotype: ♀, USNM).

Distribution: Singapore, Laos, **Vietnam**: Dai Lanh, N of Nha Trang (= Part of Khanh Hoa Province currently) (van LITH 1972).

After examined on 1 ♀ collected at Dai Lanh, van LITH (1972) showed some characters different from that of the holotype from Singapore. And he concluded that "I prefer to maintain *P. diversus* provisionally in this group. The form from Vietnam may belong to a different subspecies".

***Psenulus erraticus erraticus* (SMITH, 1860)**

Psen erraticus SMITH, 1860: 85, ♀, "Indonesia: Sulawesi: Makasar, no specific locality" (holotype or syntypes: ♀, OXUM).

Distribution: Indonesia, Philippines, Laos, **Vietnam**: Dai Lanh, N of Nha Trang (= Part of Khanh Hoa Province currently) (van LITH 1972).

van LITH (1972) commented that specimens collected from Vietnam are very similar with the subspecies *basilanensis* (ROHWER 1921) collected in the Philippine Island (Tawi Tawi) but there are some characters different between them. These specimens may belong to a new subspecies. And he also suggested that a comparative study, based on more extensive material, is needed.

***Psenulus fyanensis* van LITH, 1976**

Psenulus fyanensis van LITH, 1976: 112, ♂, "Vietnam: Fyan" (holotype: ♂, BPBM).

Distribution: Laos, **Vietnam**: Fyan (= Part of Lam Dong Province currently) (van LITH 1976).

***Psenulus pulcherrimus pulcherrimus* (BINGHAM, 1896)**

Psen pulcherrimus BINGHAM, 1896: 443, ♀, "Myanmar: Tenasserim, Amherst" (holotype: ♀, BMNH).

Distribution: Myanmar, Laos, Singapore, Thailand, Sri Lanka, Malaysia, **Vietnam**: 20 Km N of Pleiku (= Part of Gia Lai Province) (van LITH 1969).

***Psenulus quadridentatus* van LITH, 1962**

Psenulus quadridentatus van LITH, 1962: 37, ♀, ♂, "Malaysia: Pahang, Cameron Highlands Ringlet" (holotype: ♀, H.T. Pagden coll., now?).

Distribution: Malaysia, Laos, **Vietnam**: Fyan (= Part of Lam Dong Province currently) (van LITH 1972).

Subfamily Philanthinae

Tribe Cercerini

Genus *Cerceris* LATREILLE, 1802

Cerceris tonkinensis TURNER, 1919

Cerceris tonkinensis TURNER, 1919: 393, ♂, "Vietnam: Tonkin, no specific locality" (holotype: ♂, BMNH).

Distribution: Vietnam: Tonkin (= North of Vietnam currently) (TURNER 1919).

Tribe Philanthini

Genus *Philanthus* FABRICIUS, 1790

Philanthus notatulus concinnus BINGHAM, 1896

Philanthus concinnus BINGHAM, 1896: 442, ♀, "Myanmar: Tenasserim, no specific locality" (holotype or syntypes: ♀, BMNH).

Philanthus angustatus TURNER, 1919: 394, ♂, "Vietnam: Tonkin, Chapa" (holotype: ♂, BMNH).

Distribution: Malaysia, Myanmar, Indonesia: Sumatra, Philippines, Vietnam: Chapa, Tonkin (= Sa Pa District, Lao Cai Province) (TURNER 1919).

TURNER (1919) recorded this species for Vietnam under *Philanthus angustatus*, but BOHART & MENKE (1976) synonymized it with *Philanthus notatulus concinnus*.

Acknowledgements

The authors are grateful to Dr. K. Venkataraman, Director, Dr. Kailash Chandra, Officer-in-Charge of Entomology Division (A), and Dr. Gaurav Sharma, Officer-in-Charge, Hymenoptera Section, Zoological Survey of India, for providing facilities and encouragements. First author thanks Dr. Tran Huy Thai, Director, Institute of Ecology and Biological Resources for giving the decision on sending cadre abroad for the research training course, also to the Centre for Science and Technology of the Non-Aligned and Other Developing Countries (NAM S&T Centre), Government of India, for granting the scholarship for the research training course at Zoological Survey of India.

Zusammenfassung

Vorliegende Arbeit ist eine erste Gesamtvorstellung der Grabwespen (Ampulicidae, Sphecidae, Crabronidae) Vietnams. Die nachgewiesenen 49 Arten und Unterarten verteilen sich auf 3 Familien, 9 Unterfamilien sowie 20 Gattungen. Zusätzliche Angaben werden zur Synonymie und der Gesamtverbreitung gemacht.

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